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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/412,512	10/05/1999	SHUNPEI YAMAZAKI	0756-2046	9755
31780	7590	05/06/2004	EXAMINER	
ERIC ROBINSON PMB 955 21010 SOUTHBANK ST. POTOMAC FALLS, VA 20165			BOOTH, RICHARD A	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/412,512

Applicant(s)

YAMAZAKI, SHUNPEI

Examiner

Richard A. Booth

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-16, 18, 19, 31-36, 39, 40, 43, 44, 48-50 and 52-62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-16, 18, 19, 31-36, 39, 40, 43, 44, 48-50 and 52-62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/26/04 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-16, 18-19, 31-36, 39-40, 43-44, 48-50, 52, and 53-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamatani et al., JP 09-312260 in view of Zhang, U.S. Patent 5,236,850 and further in view of Curran, U.S. Patent 5,476,810 and Kim et al., U.S. Patent 6,188,452.

Hamatani et al., JP 09-312260 (an equivalent of U.S. Patent 6,077,731) shows the invention substantially as claimed including a method of manufacturing a semiconductor device comprising the steps of: forming a semiconductor film comprising silicon over a surface; irradiating said semiconductor film which includes a metal

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element for enhancing crystallization with laser light (see Figures and abstract and also see, for example, in U.S. Patent 6,077,331, col. 12-line 64 to col. 13-line 9).

Hamatani et al. fails to expressly disclose forming the semiconductor film by sputtering in an inert gas and the particular LCD structure claimed, forming the semiconductor film over a plastic substrate with an intermediate base film, and forming a gate insulating film comprising a benzocyclobutene (BCB) film on the semiconductor film.

Zhang discloses forming a semiconductor film through sputtering in an inert atmosphere (see abstract). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Hamatani et al. so as to form the semiconductor film through sputtering in an inert atmosphere because of the reasons elaborated upon by Zhang at column 1, lines 28-34. With respect to the LCD structure of claim 19, official notice was taken with respect to forming this structure previously (for example, see office action mailed 10-3-01) and therefore these limitations are considered admitted prior art. Furthermore, Curran discloses the use of plastic substrates 20 as well as intermediate films (see col. 3-line 51 to col. 7-line 4 and fig. 5). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Hamatani et al. modified by Zhang so as to use a plastic substrate because such a substrate allows for a low cost device.

Additionally, regarding the gate insulating film comprising a BCB film, Kim et al. discloses forming a gate insulating film of BCB (see col. 4-line 27 to col. 6-line 13). In

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view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Hamatani et al. modified by Zhang and Curran so as to form a gate insulating film of BCB because this provides an organic gate insulating layer of stable TFT characteristics.

Claims 58-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., EP 0,485,233 A2 in view of Curran, U.S. Patent 5,476,810 and Kim et al., U.S. Patent 6,188,452 and further in view of Kim et al., U.S. Patent 6,188,452 and Hamatani et al., JP 09-312260.

Yamazaki et al. shows the invention substantially as claimed including forming an insulating base film of silicon oxide 32 through a first sputtering method on a substrate; forming an amorphous semiconductor film 33 through a second sputtering method over the insulating base film; crystallizing the amorphous semiconductor film; forming a gate insulating film 35 on the crystallized semiconductor film, wherein an inert gas is used in the sputtering methods (see figs. 10A-10E and page 9, lines 13-51).

Yamazaki et al. fails to expressly disclose using a plastic substrate, crystallizing using a laser light exposed to the atmosphere, and a BCB film being used as the gate insulator.

Curran discloses the use of plastic substrates 20 as well as intermediate films (see col. 3-line 51 to col. 7-line 4 and fig. 5). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

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modify the process of Yamazaki et al. so as to use a plastic substrate because such a substrate allows for a low cost device.

Hamatami et al. discloses performing laser irradiation to crystallize a semiconductor film in an atmosphere (see figures and abstract). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Yamazaki et al. modified by Curran so as to irradiate with a laser in an atmosphere because this is shown by Hamatami et al. to be a suitable method in which to heat semiconductor layers.

Additionally, regarding the gate insulating film comprising a BCB film, Kim et al. discloses forming a gate insulating film of BCB (see col. 4-line 27 to col. 6-line 13). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Yamazaki et al. modified by Curran and Hamatami et al. so as to form a gate insulating film of BCB because this provides an organic gate insulating layer of stable TFT characteristics.

Response to Arguments

Applicant's arguments filed 4/26/04 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in

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the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivations to combine the references are clearly laid out in the rejections above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is (571) 272-1668. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard A. Booth
Primary Examiner
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May 3, 2004